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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/534,282 03/24/00 GUNSEL S 42053.6USPT

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EXAMINER

BERNATZ, K

ART UNIT

PAPER NUMBER

1773

DATE MAILED:

03/12/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/534,282

Applicant(s)

GUNSEL ET AL.

Examiner

Kevin M Bernatz

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-46 is/are pending in the application.
- 4a) Of the above claim(s) 38-46 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-37 is/are rejected.
- 7) ☒ Claim(s) 11,38-46 is/are objected to.
- 8) ☒ Claims 1-46 are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3,4.
- 18) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other:

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1 - 37, drawn to a magnetic recording with a lubricant layer, classified in class 694, subclass TP.
 - II. Claims 38 - 46, drawn to a composition of a lubricant, classified in class 585, subclass 20.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are related as mutually exclusive species in an intermediate-final product relationship. Distinctness is proven for claims in this relationship if the intermediate product is useful to make other than the final product (MPEP § 806.04(b), 3rd paragraph), and the species are patentably distinct (MPEP § 806.04(h)). In the instant case, the intermediate product is deemed to be useful as a lubricant for other final products, such as a magnetic head slider, and the inventions are deemed patentably distinct since there is nothing on this record to show them to be obvious variants. Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions anticipated by the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention. The two inventions are not deemed to be a combination / subcombination since the interaction of the lubricant with the magnetic medium (i.e.

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hydrogen bonding on the surface of the magnetic layer) results in a changed form for the lubricant when in the final product.

3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

4. During a telephone conversation with Mr. J. Benjamin Bai on March 2, 2001 a provisional election was made without traverse to prosecute the invention of Group I, claims 1 - 37. Affirmation of this election must be made by applicant in replying to this Office action. Claims 38 - 46 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a petition under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Specification

6. The disclosure is objected to because of informalities such as: "Al₂ O₃" should be "Al₂O₃" on page 4, line 11, etc. The applicant is requested to review the application thoroughly and make all appropriate corrections.

Claim Objections

7. Claim 11 is objected to because of the following informalities: subscript "n" for the cyclopentane is missing. Appropriate correction is required.

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8. Claims 38 – 46 are objected to because of the following informalities: the use of the word "composition" in these claims is contrary to accepted usage. A suggested change would be "compound" or "organic compound", for example.

Claim Rejections - 35 USC § 112

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

11. Regarding claim 1, the phrase "or derivatives, thereof" renders the claim(s) indefinite because the claim(s) include(s) elements not actually disclosed (those encompassed by "or derivatives, thereof"), thereby rendering the scope of the claim(s) unascertainable. See MPEP § 2173.05(b and d).

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

12. Claims 1 – 12 and 26 – 30 are rejected under 35 U.S.C. 102(b) as being anticipated by Matsushita Elec. Ind. Co. Ltd. (MATU) (JP Patent No. 58222441 A). At this time an English translation of the aforementioned document is not available, so the rejection under 102(b) is being made using the Derwent Abstract Translation (IDS reference XP-002143603).

Regarding claims 1 - 3 and 26 - 30, the claimed invention reads on MATU as follows: MATU disclose a magnetic recording medium comprising a non-magnetic

support, a magnetic layer formed on the support and a lubricant layer over the magnetic layer, wherein the lubricant layer includes a compound selected from the group consisting of hydrocarbyl-substituted cyclopentane, hydrocarbyl-substituted cyclopentene, hydrocarbyl-substituted cyclopentadiene, and mixtures or derivatives thereof (e.g. unsaturated alicyclic compounds including a positive recitation of cyclopentadiene) (abstract).

The disclosed material (cyclopentadiene) reads on applicants' claims because m and n of claims 2 and 3 can be 0, leading to a "hydrocarbyl-substituted" cyclopentadiene composed of only cyclopentadiene.

The added limitations in claims 26 – 29 are nominal apparatus claims and were given no weight in patentability since the apparatus elements recited are old in the art. The added limitations in claim 30 are nominal method steps and were given no weight in patentability. The applicant is reminded that amendment to include positive recitation of non-nominal apparatus elements or method steps can result in restriction by original presentation.

Regarding claims 4 – 12, the added limitations of these dependent claims are directed to derivatives that are a certain subclass of polar modified cyclo(pentane, pentene, pentadiene)s. However, the claims as written do **not** require that the lubricant layers of claims 4 – 12 actually consist of these derivatives. Since claims 4 – 12 incorporate all the limitations of parent claim 1, the lubricant layer still need only be selected from the group consisting of "hydrocarbyl-substituted cyclopentane, hydrocarbyl-substituted cyclopentene, hydrocarbyl-substituted cyclopentadiene, and

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mixtures or derivatives thereof", so the 'hydrocarbyl-substituted' cyclopentadiene of MATU meets the limitation of the Markush group of claims 4 – 12. Suggested rewording would be to amend claim 4 to "wherein said lubricant layer is a [the] derivative[s] of the ... cyclopentadiene and includes at least ...".

13. Claims 1 – 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Baum et al. (U.S. Patent No. 5,525,392).

Regarding claims 1 – 3, 14, 15 and 25 – 30, the claimed invention reads on Baum et al. as follows: Baum et al. disclose a magnetic recording medium comprising a non-magnetic support, a magnetic layer formed on the support and a lubricant layer over the magnetic layer (col. 1, lines 22 – 31), wherein the lubricant layer includes a compound selected from the group consisting of hydrocarbyl-substituted cyclopentane, hydrocarbyl-substituted cyclopentene, hydrocarbyl-substituted cyclopentadiene, and mixtures or derivatives thereof (e.g. cyclopentane) (col. 3, lines 54 - 67).

The disclosed material (cyclopentane) reads on applicants' claims because m and n of claims 2, 3, 14 and 15 can be 0, as explained above in paragraph 8.

Regarding claims 13 and 31, Baum et al. discloses an optional protective layer (col. 1, lines 22 – 31).

Regarding claim 25, Baum et al. discloses that it is old in the art to place a lubricant layer on a magnetic head (col. 7, lines 15 – 17).

The added limitations in claims 26 – 30 were given no weight in patentability for the reasons cited above (paragraph 8).

Regarding claims 4 – 12 and 16 - 24, the added limitations of these dependent claims are not required because of the wording of the claims (see paragraph 8).

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. Claims 1 – 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ng (U.S. Patent No. 5,128,216) in view of Venier and Casserly (Lubrication Engineering, Vol. 47, 7, 586-591, 1991: IDS reference) and further in view of Venier et al. (U.S. Patent No. 5,012,023).

Regarding claims 1 – 12 and 14 - 24, Ng discloses a magnetic recording medium comprising a non-magnetic support, a magnetic layer formed on the support and a lubricant layer over the magnetic layer (background of invention). Ng discloses fluorinated lubricants wherein the lubricant includes a nucleus selected from a cycloaliphatic having from 4 – 8 ring carbon atoms) (col. 2, line 54 bridging col. 7, line 54; notably col. 4, lines 14 - 17).

Ng fails to disclose using the exact hydrocarbyl-substituted cyclo(pentane, pentene, pentadiene) compounds as claimed by applicants. Ng does disclose the importance of having a nucleus consisting of a cycloaliphatic having from 4 – 8 ring carbon atoms (col. 4, lines 3 – 17), and further teaches the importance of adding polar groups, including phosphates, sulfates, amines, esters, carboxylic acids, etc. to improve

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the linking and bonding ability of the cycloaliphatic nucleus (col. 5, line 54 bridging col. 7, line 54 and col. 11, lines 44 - 63).

However, Venier and Casserly teach that hydrocarbyl-substituted cyclopentanes are excellent lubricants and offer performance that is superior to fluorinated lubricants (page 590, section titled: 2-Octyldodecanol Derived Multiply-Alkylated Cyclopentane). Venier et al. (023) further teach that hydrocarbyl-substituted cyclo(pentane, pentene, pentadiene) compounds are old in the art as lubricants and discloses structures meeting applicants' claimed limitations in claims 2 and 14.

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Ng to include hydrocarbyl-substituted cyclo(pentane, pentene, pentadiene) compounds as taught by Venier and Casserly in view of Venier et al. (023) since these compounds offer performance that is superior to fluorinated lubricants.

Regarding the limitations added in claims 3 - 12 and 15 - 24, the modification of hydrocarbyl-substituted cyclo(pentane, pentene, pentadiene) to include polar substituents is old in the art. Applicants admit that the method of making these compounds is old (page 9, lines 10 - 15) and the term "hydrocarbyl" is understood in the art to allow for functionalized hydrocarbyl groups (Hayashi, U.S. Patent 4,566,983, col. 2, line 40 bridging col. 3, line 30 - reads on claims 3 - 5, 7 - 10, 12, 15 - 17, 19 - 22, and 24). For additional support that these compounds are old in the art, see also:

- Enc. Chem. Tech. teaches structures that are old in the art for lubricants (reads on claims 3, 4, 6, 7, 15, 16, 18 and 19);

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- Venier and Casserly (IDS: Symposium on the Chem. of Lubricants, Boston Meeting, Pre-prints, Vol. 35 #2, 1990) teach Diels-Alder functionalized lubricants (reads on claims 12 and 24);
- Boatto et al. (IDS: Il Farmaco, 48(9) 1993) teach amide functionality (reads on claims 3, 4, 8 - 10, 15, 16, and 20 - 22);
- Frey et al. (U.S. Patent No. 5,578,741, col. 1, line 66 bridging col. 2, line 52) teach hydrocarbyl-substituted cyclopentadiene with phosphorus or nitrogen functionality (reads on claims 3, 4, 6, 8, 10, 15, 16, 18, 20, and 22);
- Emert et al. (U.S. Patent No. 5,578,237, col. 10, lines 21 - 65) teach bridged cyclopentadienes with alkyene or amine radicals (reads on claims 3, 4, 8, 10, 11, 15, 16, 20, 22 and 23);
- Patsidis et al. (U.S. Patent No. 5,541,351, col. 2, line 19 bridging col. 3, line 22) teach bridged cyclopentadienes with alkene, amine or phosphorous radicals (reads on claims 3, 4, 6, 8, 10, 11, 15, 16, 18, 20, 22 and 23);
- Matsui et al. (U.S. Patent No. 5,310,439, col. 2, lines 20 - 48) teach substituting cyclopentadienes with functionalized hydro-carbyl groups containing polar compounds (reads on claims 3 - 5, 7, 8, 10, 11, 15 - 17, 19, 20, 22 and 23);
- Tsuchiya et al. (U.S. Patent No. 5,084,516, col. 1, line 61 bridging col. 2, line 51) teach improving the flowability of cyclopentadiene by adding hydrocarbyl groups functionalized with polar substituents (reads on claims 3 - 5, 7, 8, 10, 15 - 17, 19, 20, and 22); and

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- Falcone (U.S. Patent No. 5,874,169, figures and col. 2, lines 56 - 62) teaches a high bonding lubricant based on a phosphate core (reads on claims 3, 4, 6, 15, 16 and 18).

The selection of one hydrocarbyl-substituted cyclo(pentane, pentene, pentadiene) or derivative versus any other hydrocarbyl-substituted cyclo(pentane, pentene, pentadiene) or derivative would have been obvious to one of ordinary skill in the art barring a showing of criticality of one compound over the others (i.e. the various compounds are deemed to be equivalents to each other in the field of lubrication).

In addition, the examiner would like to remind the applicants that the replacement of a material with another material known in the art to solve the same problem (e.g. lubrication) is not grounds for patentability, per se. When forming a *prima facie* case of obviousness, the substitution of equivalents requires no express motivation as long as the prior art recognizes the equivalency. In the instant case, hydrocarbyl-substituted cyclo(pentane, pentene, pentadiene) compounds and fluorinated compounds are equivalents in the field of lubricants. *In re Fount* 213 USPQ 532 (CCPA 1982); *In re Siebentritt* 152 USPQ 618 (CCPA 1967); *Graver Tank & Mfg. Co. Inc. v. Linde Air Products Co.* 85 USPQ 328 (USSC 1950).

Regarding claims 13 and 31, Ng discloses a protective layer for the magnetic recording (col. 11, lines 58 - 63).

Regarding claim 25, it is old in the art to place a lubricant layer on a magnetic head (see Baum et al., paragraph 9 above).

The added limitations in claims 26 – 30 were given no weight in patentability for the reasons cited above (paragraph 8).

Regarding claims 32 – 35, Venier et al. (023) teach that the lubricant can include encompassing additives (col. 7, line 62 bridging col. 8, line 25).

Regarding claims 36 and 37, Venier et al. (023) teach that one can mix the type of lubricants used depending on the desired end use (col. 8, lines 15 – 25) and it is deemed that the composition of a mixture of lubricants is a cause-effective variable. It would have been obvious to one having ordinary skill in the art to have determined the optimum value of a cause effective variable such as the composition of the lubricant mixture through routine experimentation in the absence of a showing of criticality in the claimed mixture compositions. *In re Boesch*, 205 USPQ 215 (CCPA 1980), *In re Woodruff*, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Rhone-Poulenc Syst. (FR 2559606) disclose a magnetic recording medium with improved wear-resistance by using a cerium modified cyclopentane (Derwent Abstract). Yanagihara et al. (U.S. Patent No. 4,693,799) teach plasma coating a layer from alicyclic hydrocarbons (col. 4, lines 32 – 59) that can be enriched in aromatic rings, amino, mercapto, hydroxyl or carboxyl groups, etc. depending on the desired end use (col. 5, line 42 bridging col. 6, line 62).

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17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M Bernatz whose telephone number is (703) 308-1737. The examiner can normally be reached on M-F, 9:00 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Thibodeau can be reached on (703) 308-2367. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-6078 for regular communications and (703) 305-3599 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0651.



KMB
March 6, 2001



STEVAN A. RESAN
PRIMARY EXAMINER